

### **REMARKS**

This Response is in reply to the Office Action rejection mailed on October 2, 2007. Claims 1-12, 14-28, and 30 were pending in the application. Claims 1-9 and 19-24 have been withdrawn. Claims 10-12, 14-18, 25-28, and 30 were rejected.

#### **§112 Rejections of Claims 10-12, 14-28, and 30**

Claims 10 and 25 stand rejected under §112, second paragraph, as being indefinite because the term “chlorotrifluoroethylene” is a gas and it was unclear to the Examiner how a lubricant could be a gas. Applicants point out that the chlorotrifluoroethylene is a polychlorotrifluoroethylene. This is obvious from the description presented in paragraph 0044 of the specification and the molecular weights presented in Table 2 of the specification. However, to avoid any ambiguity, claims 10 and 25 have been amended to recite polychlorotrifluoroethylene rather than chlorotrifluoroethylene.

Claim 18 was rejected because of insufficient antecedent basis for “the ionizing gas plasma.” As suggested by the Examiner, claim 18 should depend from claim 15 and appropriate amendment has been made.

#### **§102 Rejections of Claims 10-12 and 14**

Claims 10-12 and 14 were rejected under §102(b) as being anticipated by U.S. Patent 5,830,577 (hereinafter Murayama). Murayama discloses a surface with acidic functional groups. A “host” molecule of a crown ether is adhered to the surface through electrostatic interaction with the acidic functional groups. A lubricant “guest” molecule with a binding site is then applied which binds to the host molecule. ***It is critical to note that Murayama teaches that the lubricant is bound to the host molecule, not the surface.***

Claim 10 has been amended to now include the subject matter of claim 16 which states that the energy source is ionizing radiation. Applicants submit that Murayama does not disclose an article with a lubricant coated surface exposed to ionizing radiation. Because claim 16 is excluded from the rejection under §102(b), the Examiner appears to be in agreement. Therefore, Murayama does not disclose each and every limitation of claim 10 as amended adding the subject matter of claim 16. For at least these reasons, independent claim 10 and dependent claims 11, 12, and 14 are not anticipated by Murayama and are in condition for allowance.

**§103 Rejections of 10-12, 14-18, 25-28, and 30**

Claims 10-12, 14-18, 25-28, and 30 were rejected under §103(a) as being unpatentable over U.S. Patent 4,822,632 (hereinafter Williams) in view of Murayama. Williams teaches applying a silicone oil to a surface and then treating the silicone oil with an ionizing plasma at conditions of extreme vacuum.

The Examiner suggests that because Murayama discloses both silicone oils and perfluoropolyethers, then these two compounds must be interchangeable for one another and, thus, perfluoropolyethers can be substituted for the silicone oil in Williams. Applicants respectfully disagree and assert that neither reference provides such a teaching, as discussed further below.

As stated above, ***it is critical to note that Murayama teaches that the lubricant is bound to the host molecule, not the surface.*** Murayama teaches that (1) the surface must first be comprised of acidic functional groups; (2) a host molecule is needed to bind to the acidic functional groups; and (3) the lubricant (perfluoropolyether) binds to the host molecule. Thus, Murayama teaches that the host molecule provides adhesion to the surface and that the lubricant does not, by itself, adhere to the surface. Contrast this to Williams in which the silicone oil is ***applied directly to the surface without an intermediary compound.***

At best, one skilled in the art would understand Murayama to teach that in order to bind a perfluoropolyether to a surface, a host compound would be needed which binds both to the surface and a binding site on the perfluoropolyether. Moreover, in order to get the host compound to adhere to the surface, the surface must include acidic functional groups as binding sites. Therefore, based on this teaching, Applicants submit that there is no reasonable expectation of success of simply taking a perfluoropolyether and applying it directly to a surface, much less a surface without acidic functional groups. Thus, there is no motivation for one skilled in the art to combine Williams and Murayama. In fact, based on the above, the motivation would be that Williams and Murayama could not be combined because there would be insufficient adhesion between the perfluoropolyether and the surface without the host molecule being present.

Additionally, Williams teaches against the use of fluorochemical compounds. In a discussion of the use of a fluorochemical compound, Williams states that “the approach has not been totally effective.” Williams continues this discussion by stating that “[t]hus, there is a need for a better method to overcome high breakout forces.” Col. 2, lines 18-25. Williams, then, teaches away from fluorochemical compounds. As a result, one skilled in the art would find no motivation to combine the perfluoropolyether of Murayama with the teachings of Williams. ***Both***

**references teach away from this combination.** Therefore, the combination of Williams and Murayama is improper and the rejections based on the combination cannot be maintained.

Once again, Applicants disagree with the Examiner's interpretation of the phrase "any pressure" as used in Williams to describe the operating pressure of the plasma system. Assuming *arguendo* that Williams' "any pressure" language is a broad invitation to try other pressures, such broad invitational language is clearly not of sufficient specificity to place the subject matter in the public domain, as required by the Federal Circuit in *Minnesota Min. & Mfg. Co. v. Johnson & Johnson Othopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed Cir. 1992). If the Examiner's interpretation of the broad invitational language is correct, then Williams must necessarily teach operating an ionizing gas plasma at about atmospheric pressure. The cited passage at most merely invites those of skill in the art to try pressures ***within the scope of the teachings*** other than those specifically set forth. The scope of the teachings is clearly directed only to ionizing gas plasmas produced under conditions of extreme vacuum. Therefore, Williams does not teach, nor provide any motivation to try, an ionizing gas plasma at about atmospheric pressure.

Thus, Williams does not teach an ionizing radiation energy source at about atmospheric pressure as required by independent claim 10, nor an ionizing gas plasma at about atmospheric pressure as required by independent claim 25. Additionally, Murayama does not cure this defect. For at least these reasons, independent claim 10 and its dependent claims 11, 12, 14, 15, 17, and 18, and independent claim 25 and its dependent claims 26-28 and 30 are not made obvious by Williams and Murayama and are in condition for allowance. Claim 16 has been canceled.

Further, Applicants direct the Examiner's attention to the §1.132 Declaration submitted by one of the listed inventors of the present application and submitted concurrently with this response. As detailed in the Declaration, poor lubricity results were obtained when using either a perfluoropolyether lubricant of the present invention or a perfluoropolyether lubricant with binding sites as disclosed by Murayama with the vacuum plasma method disclosed by Williams. None of the experiments carried out using vacuum plasma, regardless of the specific lubricant used, were able to obtain lubricity results comparable with the lubricity obtained by the present application.

Assuming, *arguendo*, that the Examiner's assertion that one skilled in the art would combine the teachings of Williams and Murayama, the expected result would have been that treating a perfluoropolyether with a vacuum plasma according to the teachings of Williams would achieve high levels of lubricity. However, this was not the case, as very poor results

(comparable to lubricated syringes without any type of plasma treatment) were obtained with the method of Williams. ***Only when a lubricant was treated with an ionizing gas plasma at about atmospheric pressure were high levels of lubricity obtained.*** These surprising and unexpected results clearly demonstrate that one skilled in the art would not combine Williams and Murayama. Thus, any rejections based on the combination are improper and must fail.

**Other Claim Amendments and New Claims**

Claim 28 has been amended to correct the dependency of the claim and to more closely reflect the terminology of the independent claim from which it depends. These amendments do not add new matter and are not made in light of prior art.

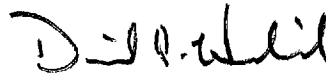
New claims 32-37 have been added depending from independent claim 10. The new claims are commensurate in scope with claim 10, and support for the subject matter of the new claims can be found throughout the specification. No new matter has been added.

New claims 38 and 39 have been added depending from independent claim 25. The new claims are commensurate in scope with claim 25, and support for the subject matter of the new claims can be found throughout the specification. No new matter has been added.

All objections and rejections having been addressed, it is respectfully submitted that the present application, as amended, is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.



---

David P. Hendricks  
Registration No.: 53,014

Dated: December 28, 2007

P.O. Box 5  
Raleigh, NC 27602  
Telephone: (919) 854-1844  
Facsimile: (919) 854-2084